

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

NARUTAKI et al.

Atty. Ref.: 829-609

Serial No. To be Assigned

Group:

Filed: July 15, 2003

Examiner:

For: COLOR FILTER LAYER AND DISPLAY DEVICE USING THE SAME

* * * * *

July 15, 2003

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

In order to place the above-identified application in better condition for examination, please amend the application as follows:

IN THE SPECIFICATION

Before the first line on page 1, please insert the following new paragraph:

- - This application is a divisional of U.S. Patent Application Serial No.

09/695,400, filed October 25, 2000, which is a Continuation-in-Part (CIP) of 09/236,397, filed January 25, 1999, both of which are hereby incorporated herein by reference.

Priority is claimed on both. - -

IN THE CLAIMS

Please cancel claims 1-21.

Please add the following new claims:

22. (New) A transreflective liquid crystal display comprising:

first and second substrates, with a liquid crystal layer provided between the substrates;

the first substrate supporting a color filter structure including a plurality of different colored portions;

the second substrate supporting reflectors in at least respective reflective display regions and transmissive pixel electrodes provided in at least transmissive display regions, each of the reflective and transmissive display regions for contributing to display of an image; and

wherein color pigment concentration in at least different parts of the color filter structure varies so that the color pigment concentration in the color filter structure is lower in the reflective display regions than in the transmissive display regions for color filter regions of the same color.

23. (New) A color filter layer, comprising:

a first color filter region, and a second color filter region having the same color as the first color filter region,

wherein color pigment concentration of the first color filter region is different than color pigment concentration of the second color filter region, and

the number of times that light is transmitted through the color filter layer is different between the first color filter region and the second color filter region.

24. (New) The color filter layer of claim 23, wherein the first and second color filter regions are both blue so that they have the same color.

25. (New) A display device, comprising:
a first substrate having a display region, the display region including at least one reflective region in which light is reflected by a reflection means for display and at least one transmissive region through which light is transmitted for display;

a color filter layer including at least one first color filter region and at least one second color filter region having the same color as the first color filter region;

wherein color pigment concentration of the at least one first color filter region is different than color pigment concentration of the at least one second color filter region;
and

the number of times that light used for display is transmitted through the color filter layer is different between the at least one first color filter region and the at least one second color filter region.

26. The display device of claim 25, wherein both of said first and second color filter regions are blue shaded in color, so as to have the same color.

27. (New) A display device, comprising:

a first substrate having a display region, the display region including at least one reflective region in which light is reflected by a reflection means for display and at least one transmissive region through which light is transmitted for display;

a color filter structure including at least one first color filter region and at least one second color filter region having the same color as the first color filter region;

wherein color pigment types of the at least one first color filter region is/are different than color pigment types of the at least one second color filter region.

28. (New) The display device of claim 27, wherein the first and second color filter regions are each blue in color.

29. (New) A transreflective liquid crystal display comprising:

first and second substrates, with a liquid crystal layer provided between the substrates;

the first substrate supporting a color filter structure including a plurality of different colored portions; and

wherein color pigment concentration in at least parts of the color filter structure varies so that color pigment concentration is lower in at least some reflective display regions than in at least some transmissive display regions for color filter regions of the same color.

30. (New) A transflective liquid crystal display comprising:

first and second substrates, with a liquid crystal layer provided between the substrates;

a color filter structure including a plurality of different colored portions;

the second substrate supporting reflectors in at least respective reflective display regions and transmissive electrodes provided in at least transmissive display regions, each of the reflective and transmissive display regions for contributing to display of an image;

and

wherein color pigment concentration in at least parts of the color filter structure varies so that the color pigment concentration in the color filter structure is lower in at some of the reflective display regions than in at least some of the transmissive display regions for color filter regions of the same color.

31. (New) A liquid crystal display for displaying an image, the liquid crystal display including a plurality of pixels and comprising:

a first substrate;

a second substrate;

a liquid crystal layer interposed between at least the first and second substrates;

a pixel region comprising a reflection region having light reflectivity and a transmission region having light transmissivity, each of the reflection region and the transmission region for contributing to display of an image so that reflected light from the

reflection region and transmitted light from the transmission region are utilized in displaying the image;

wherein the first substrate supports at least one color filter located in each of the transmission region and the reflection region, so that the color filter is located partially in the transmission region and partially in the adjacent reflection region; and

wherein, in said reflection region, a transmissive non-color filter region having no color filter is located immediately adjacent the color filter so that light for display in the reflection region passes through both the color filter and the transmissive non-color filter region.

32. (New) The display of claim 31, wherein the transmissive non-color filter region is located directly on top of part of the color filter in the reflection region.

33. (New) The display of claim 31, wherein the transmissive non-color filter region is located directly under part of the color filter in the reflection region.

34. (New) The display of claim 31, wherein at least part of the transmissive non-color filter region is located so as to contact at least part of a sidewall of at least part of the color filter in the reflection region, so that at least part of the transmissive non-color filter region is coplanar with at least part of the color filter in the reflection region, and wherein the color filter overlaps with all of a transmissive electrode in the transmission region.

35. (New) A transflective liquid crystal display for displaying images, the liquid crystal display including first and second substrates and a liquid crystal layer located between at least the first and second substrates, the transflective liquid crystal display comprising:

a pixel region comprising a reflection region having light reflectivity and a transmission region having light transmissivity, each of the reflection region and the transmission region for contributing to display of an image so that reflected light from the reflection region and transmitted light from the transmission region are utilized in displaying the image;

a color filter structure located in each of the transmission region and the reflection region;

wherein, in the reflection region, the color filter structure comprises each of a color filter and a transmissive non-color filter region that is located adjacent to and contacting the color filter so that light for display in the reflection region passes through both the color filter and the transmissive non-color filter region; and

wherein at least part of the transmissive non-color filter region is located so as to contact at least part of a sidewall of at least part of the color filter in the reflection region so that at least part of the transmissive non-color filter region is coplanar with at least part of the color filter in the reflection region.